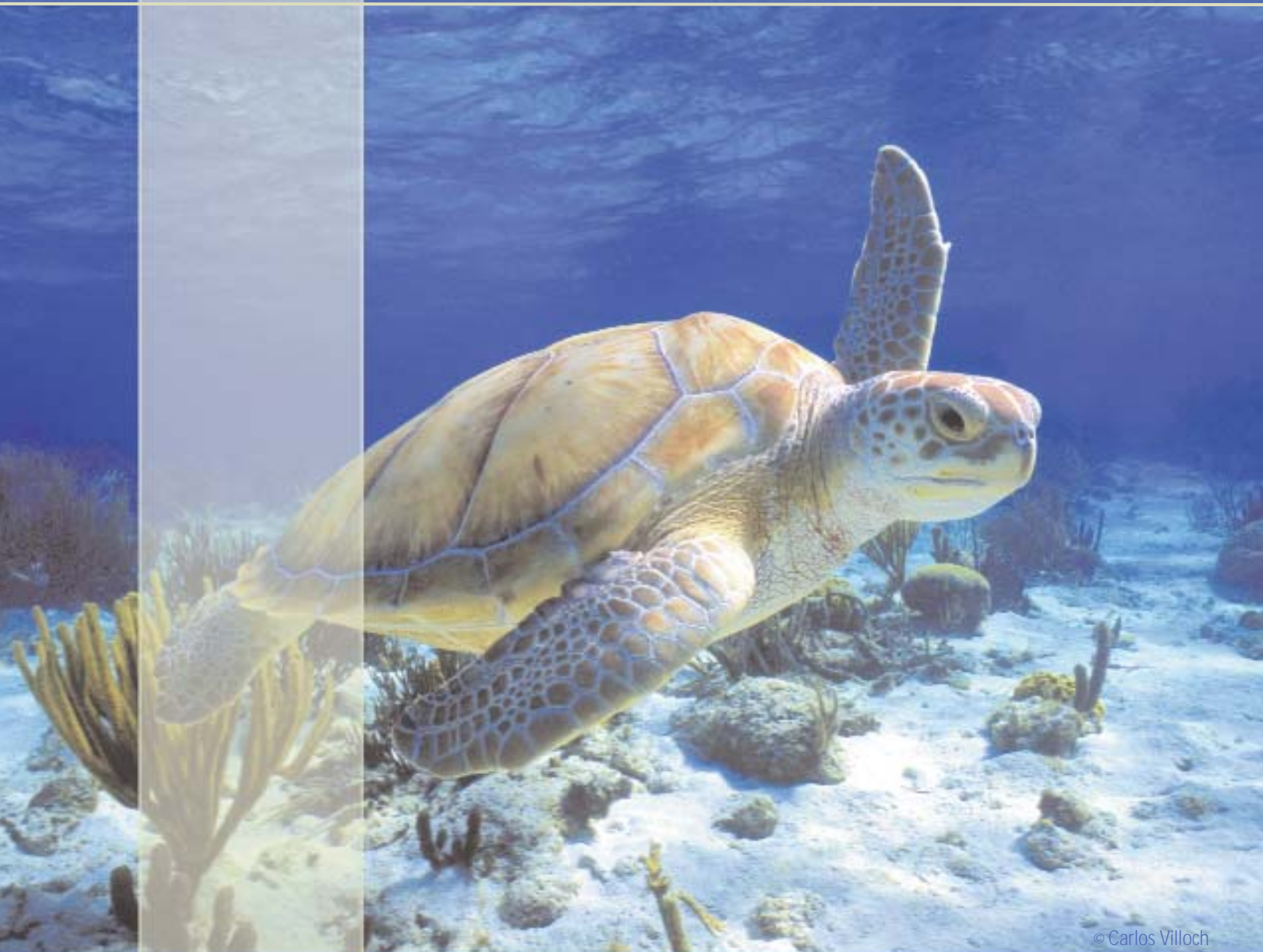




The Caribbean Environment Programme



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*Promoting regional co-operation
to protect the marine environment*

The Caribbean Environment Programme

MISSION

Promoting regional co-operation for the protection and development of the marine environment of the Wider Caribbean Region.



On March 24, 1983, the nations of the Wider Caribbean Region met in Cartagena de Indias, Colombia, to adopt the “Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region.” Its preamble, in part, reads:

- The Contracting Parties,
- CONSCIOUS** of their responsibility to protect the marine environment of the Wider Caribbean Region for the benefit and enjoyment of present and future generations,
 - RECOGNIZING** the special hydrographic and ecological characteristics of the region and its vulnerability to pollution,
 - RECOGNIZING FURTHER** the threat to the marine environment, its ecological equilibrium, resources and legitimate uses posed by pollution and by the absence of sufficient integration of an environmental dimension into the development process,
 - CONSIDERING** the protection of the ecosystems of the marine environment of the Wider Caribbean Region to be one of their principal objectives,
 - REALIZING** fully the need for co-operation amongst themselves and with competent international organisations in order to ensure co-ordinated and comprehensive development without environmental damage.

Have agreed as follows...



Protecting the Caribbean Sea

KNOWN WORLDWIDE for its tropical breezes, abundant waters, and interesting culture, the Caribbean region depends upon a healthy environment to sustain its people and their livelihoods. The Caribbean Environment Programme (CEP) helps nations protect the marine environment and promotes sustainable development in the Wider Caribbean Region. Although a part of the United Nations Environment Programme (UNEP), the CEP is managed by and for the diverse Caribbean nations and territories under a legal and programmatic framework they created in 1981.

The Wider Caribbean Region is one of the most culturally and economically diverse areas in the world. Its traditions and customs are a mix of Latino, African, European, South Asian, Indian, and Native American cultures. It is a region of great natural beauty and abundance, and also of great economic disparity. CEP works as a facilitator, educator, and catalyst to co-ordinate activities and build the capacity of all member governments in the region to manage their coastal environments and build sustainable coastal economies.

As one of UNEP's regional seas programmes, the CEP helps link Caribbean states to each other and to other institutions working in the region. The CEP also is part of UNEP's Division of Environmental Conventions and works closely with UNEP's Regional Office for Latin America and the Caribbean (ROLAC).

The 28 UN member states that created CEP encircle the Caribbean Sea and Gulf of Mexico: from as far north as Florida in the United States to as far south and east as French Guiana on the North Coast of South America. The region also includes Mexico, Central America, and the many small island nations and territories of the insular Caribbean.



Governments in the region have identified a number of pressing issues, including:

■ **LAND-BASED SOURCES OF POLLUTION.** Municipal, industrial and agricultural wastes and run-off account for as much as 90 percent of all marine pollution. Sewage and wastewater, pesticides, heavy metals, oils, nutrients, and sediments can harm both human health and coastal ecosystems.

■ **OVER-EXPLOITATION OF RESOURCES.** Fish, mollusks, and crustaceans provide recreational and industrial fish stocks as well as food for subsistence communities. But over-harvesting and pollution have depleted fish populations faster than they can recover through natural population growth. According to a 1994 assessment, some 35 percent of fish stocks in the Wider Caribbean Region were considered overexploited. Other species such as sea turtles, manatees, and other marine mammals are disappearing at an alarming rate.

■ **INCREASING URBANISATION AND COASTAL DEVELOPMENT.** Population growth and tourism are prompting the conversion of the natural Caribbean coastlines into ports, tourist beaches, and new communities. Clearing of mangrove forests and other natural areas reduces habitat for endangered wildlife, as well as nurseries for important fisheries.

■ **UNSUSTAINABLE AGRICULTURAL AND FORESTRY PRACTICES.** Deforestation and agricultural activities have increased sediment loads into Caribbean coastal areas. The World Wildlife Fund estimates that the forests of Central America are being cleared faster than anywhere else in the world. Excess nutrients and pesticides can cause fish kills and make nearshore environments unsuitable for popular tourist activities such as swimming, snorkeling, and scuba diving.

■ **A NEED TO STRENGTHEN GOVERNMENT AND INSTITUTIONAL CAPACITY.** Governments in the Wider Caribbean Region can benefit greatly from training, information-sharing, and technical assistance geared toward national institutions responsible for addressing environmental problems. Environmental pressures take a particular toll on small island states, whose size and isolation make them vulnerable to extinctions, habitat loss, and rising sea levels.

■ CEP is managed by and for the diverse Caribbean nations and territories under a legal and programmatic framework they created in 1981.

The Wider Caribbean Region

Antigua and Barbuda	Grenada	Saint Kitts and Nevis
Bahamas	Guatemala	Saint Lucia
Barbados	Guyana	Saint Vincent and the Grenadines
Belize	Haiti	Suriname
Colombia	Honduras	Trinidad and Tobago
Costa Rica	Jamaica	United Kingdom of Great Britain and Northern Ireland
Cuba	Mexico	United States of America
Dominica	Kingdom of the Netherlands	Venezuela
Dominican Republic	Nicaragua	
France	Panama	



Legal and Programmatic Framework

In the 1970s, Wider Caribbean governments grew concerned about the future of social and economic development and resources management in the Caribbean. The governments also realised that addressing these issues could only be accomplished through an integrated, co-operative, regional approach. In 1981, the Caribbean nations adopted CEP's Action Plan in order to strengthen environmental practices in the region. The Action Plan committed the governments of the Wider Caribbean Region to work toward common objectives.

The Action Plan led to the 1983 adoption of the "Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region" in Cartagena de Indias, Colombia. Known as the "Cartagena Convention," it became legally binding on October 11, 1986. By signing and ratifying the Convention, states agree to:

- take all appropriate measures to prevent, reduce and control pollution and to ensure sound environmental management,
- conduct environmental impact assessments for major development projects,
- co-operate in scientific research, monitoring and the exchange of data and other information, and
- co-operate in cases of emergency.

The Cartagena Convention's environmental priorities include controlling pollution from ships, waste-dumping at sea, land-based sources, sea-bed activities, and airborne pollution, as well as protecting rare or fragile ecosystems and the habitats of depleted, threatened, or endangered species.

The Convention has been supplemented by three protocols, or sub-agreements, for addressing specific environmental issues in the region. After adoption, the protocols must be ratified by nine states before becoming international law. The protocols are:

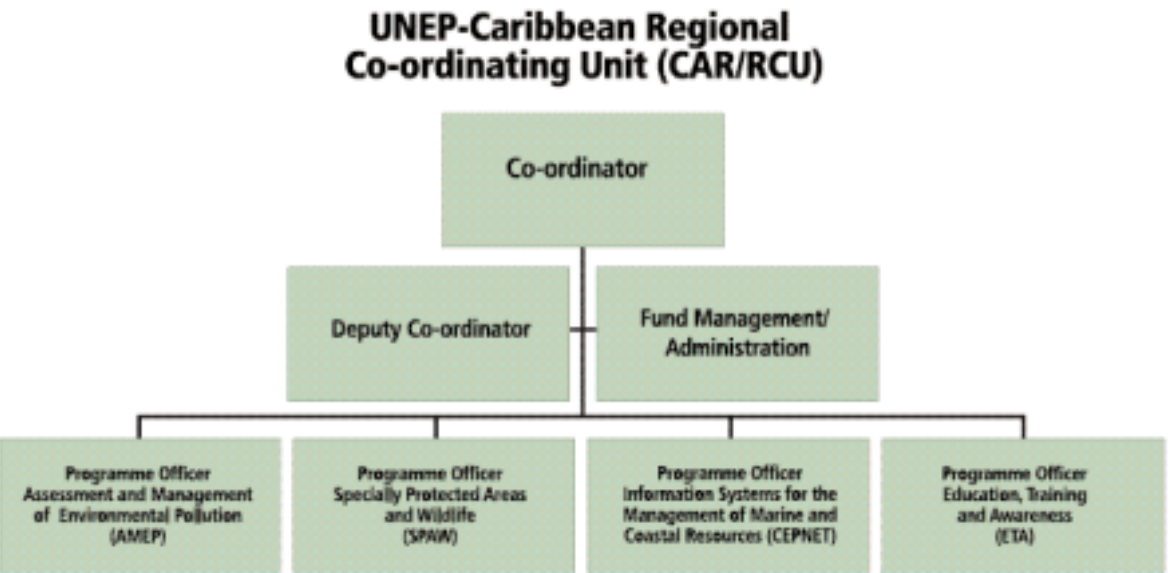
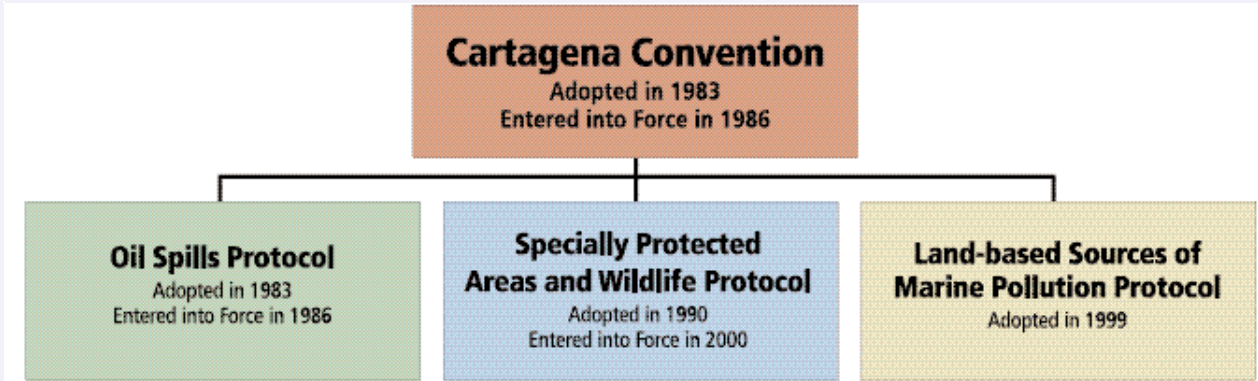
- **THE PROTOCOL CONCERNING CO-OPERATION IN COMBATING OIL SPILLS**, which was adopted with the Convention in 1983 and became interna-



tional law in 1986. Signatory nations agree to help prevent and remediate oil spills in the marine environment, including developing capabilities to respond to spill emergencies.

- **THE PROTOCOL CONCERNING SPECIALLY PROTECTED AREAS AND WILDLIFE (SPAW PROTOCOL)**, which was adopted in 1990 and became international law in 2000. Signatory nations agree to protect, preserve and manage in a sustainable way: areas that require protection to safeguard their special value; threatened or endangered species of flora and fauna; and other important species, to prevent them from becoming threatened or endangered.

- **THE PROTOCOL CONCERNING POLLUTION FROM LAND-BASED SOURCES AND ACTIVITIES**, which was adopted in 1999. Signatory nations agree to establish effluent and emissions limitations and/or best management practices for priority pollutants and to promote co-operation in monitoring, research, and exchange of scientific and technical information on land-based pollution.



To help facilitate the implementation of the Convention and its protocols, the governments created a Regional Co-ordinating Unit (CAR/RCU) for CEP with a Co-ordinator and staff stationed in Kingston, Jamaica. Created in 1986 and administered by UNEP, CAR/RCU serves as a secretariat to CEP, the Cartagena Convention, and its Protocols. CAR/RCU staff help co-ordinate numerous scientific and technical projects conducted by national and technical agencies, bodies of experts, scientific and academic institutions, non-governmental organisations, and others. CAR/RCU does not conduct research and implement projects itself, but coordinates projects and helps to collect, review, and disseminate studies, publications, and the results of work performed under the aegis of CEP. In addition, CEP has established a Regional Activity Centre in Guadeloupe to support the implementation of the SPAW Protocol and another in Curaçao for the Oil Spill Protocol.

The Caribbean Environment Programme has four main sub-programmes:

- **ASSESSMENT AND MANAGEMENT OF ENVIRONMENTAL POLLUTION (AMEP)**, which facilitates implementation of the protocols on land-based sources and oil spills, as well as such global agreements as the Basel Convention and the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

- **SPECIALLY PROTECTED AREAS AND WILDLIFE (SPAW)**, which facilitates implementation of the SPAW Protocol and coordinates with numerous related global initiatives, such as the Convention on Biological Diversity, the Ramsar Convention on wetlands protection, the Convention on

International Trade in Endangered Species (CITES), the International Coral Reef Initiative, and the Global Coral Reef Monitoring Network.

- **INFORMATION SYSTEMS FOR THE MANAGEMENT OF MARINE AND COASTAL RESOURCES (CEPNET)**, which supports all CEP activities by promoting information and data exchange, through both electronic information systems and networks of experts and agencies.

- **EDUCATION, TRAINING AND AWARENESS (ETA)**, which develops the research, technical, and managerial capability of Caribbean states and territories to address environmental issues.

Through Intergovernmental Meetings held every two years, participating governments and Contracting Parties review CEP's progress in implementing the Cartagena Convention, chart future activities, and oversee financial and institutional arrangements. Between Intergovernmental Meetings, a 13-nation Monitoring Committee and Bureau of Contracting Parties supervises the programme's development and provides policy direction.

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Promoting Sustainable Coastal Economies

PROMOTING BALANCED AND SUSTAINABLE ECONOMIC DEVELOPMENT in the Caribbean region is an integral part of CEP's mission. In the Wider Caribbean Region, economic prosperity depends upon a healthy environment. Tourism relies upon an abundance of clean beaches, healthy coral reefs, and safe water. Both industrial and subsistence fishing require healthy and sustainable fish populations. Agricultural and forestry practices must be managed to sustain both local populations and coastal resources.

All three CEP protocols emphasize the link between economic development and environmental protection. Through its projects, publications, and workshops, CEP seeks to sustain economic development in Caribbean nations by promoting sound environmental management in all coastal economies. Its activities include:

■ **IMPROVING AGRICULTURAL PRACTICES.** Through technical reports, workshops, and networking, CEP encourages best management practices for erosion and sediment control, water and land use management, and pesticide and nutrient control.

■ **PROMOTING SUSTAINABLE TOURISM.** CEP promotes successful practices for beach management; sewage and solid waste disposal; environmentally sound hotel management; ecotourism; and the design and construction of hotels and marinas.

■ **PREVENTING AND PREPARING FOR OIL SPILLS.** CEP has offered training in oil spill response in co-operation with the Regional Marine Pollution Emergency, Information and Training Center-Carib and the Clean Caribbean Co-operative. Oil spill response teams are trained using classroom instruction, simulated exercises, and role-playing.

■ **ENCOURAGING BETTER FISHERIES MANAGEMENT AND PROTECTION OF CRITICAL HABITATS.** CEP helps nations establish and manage marine reserves and protected areas, and helps disseminate information on the health of Caribbean fisheries and the need for more sustainable practices.

■ **ESTABLISHING REGIONAL EFFLUENT LIMITS AND MANAGEMENT PRACTICES.** The Protocol Concerning Pollution from Land-Based Sources and Activities calls for the establishment of region-wide effluent limits and management practices for the following priority sources: domestic sewage, agricultural non-point sources, chemical industries, extractive industries and mining, food-processing operations, manufacture of liquor and soft drinks, oil refineries, pulp and paper factories, sugar factories and distilleries, and intensive animal-rearing operations.



■ CEP seeks to sustain economic development in Caribbean nations by promoting sound environmental management in all coastal economies

Working to Reduce Pesticide Run-off

Agriculture has long been a mainstay of many Caribbean economies. The region produces approximately 60 percent of the world's coffee, 40 percent of its bananas, 25 percent of its beans, 20 percent of its cocoa, and significant quantities of sugar, corn, vanilla, and other crops. Many of these crops are grown in large monocrop plantations, increasing the need for pesticides and fertilizers – and causing damage to the coastal environment.

CEP is working with the Global Environment Facility to reduce run-off of pesticides in the Caribbean under a project with the countries of Nicaragua, Costa Rica, Panama, and Colombia. Prevailing currents flow in a circular pattern along the Caribbean coast shared by these countries. Trans-boundary pollution can result when contaminants released into coastal waters of one nation impact the other three. Therefore, regional co-operation is necessary.

The CEP project analyzed current pesticide use and environmental impacts in each country, and identified barriers to more sustainable pesticide management practices. Working with affected stakeholders, each country will develop a national policy framework and regulatory system for the use and control of pesticides. Based on national and regional investigations, CEP helped identify common problems and priorities for action at the regional level.

The project is strengthening each country's ability to regulate pesticide use while encouraging regional co-operation on problems they share. It also encourages the agricultural sector to implement better management practices to reduce the need for pesticides and ensure a more sustainable future.



Protecting Coral Reefs

SOMETIMES CALLED THE “RAINFORESTS OF THE SEA,” coral reefs support an abundance of marine life. As one of the most productive and diverse of all natural ecosystems, coral reefs provide food and shelter for fish, shrimp, crabs, oysters, clams, turtles, and many other marine creatures. Coral reefs also provide coastal protection during storms and hurricanes.

The beauty of Caribbean reefs draws millions of international tourists who support many local economies. Unfortunately, by the year 2000 scientists estimated that 27 percent of the world’s coral reefs had been lost, and 40 percent could be lost by 2010 unless urgent action is taken. In the Caribbean alone, 22 percent of coral reefs are already lost and many more seriously threatened. The major threats are linked to human activities: sewage, industrial and agricultural pollution, erosion, and over-exploitation of fisheries.

Under the Protocol Concerning Specially Protected Areas and Wildlife (SPA Protocol), CEP unites governments and other institutions to protect coral reefs in the Caribbean. Activities include:

■ **CO-ORDINATING INTERNATIONAL ACTIVITIES.** CEP co-ordinates Caribbean activities with the International Coral Reef Initiative (ICRI), creating an environmental partnership that allows developing countries with coral reefs to work on conservation strategies with donor countries, development banks, and international agencies, among others.

■ **ENCOURAGING BETTER MANAGEMENT.** CEP promotes best management practices for coral reefs, including sustainable fisheries and tourism practices.

■ **MONITORING AND DISSEMINATING INFORMATION.** CEP identifies gaps in monitoring and information, and offers financial and technical support to help Caribbean nations monitor and assess the health of their coral reefs. National institutions and non-governmental organisations prepare national and sub-regional reports on the status of the reefs for governments, the public, the news media, and international donor organisations.

■ **PARTNERING.** Working with non-government organisations and local communities, CEP helps raise public awareness, promotes best management practices and alternative livelihoods, and assists with enforcement of regulations protecting coral reef resources.

■ **PROMOTING REMEDIATION.** CEP encourages remedial actions, where necessary, such as restoration and rehabilitation of degraded ecosystems.

Coral reefs are vitally important to the marine environment and human development in the Caribbean. Governments, academia and other institutions in the region must continue working together to protect this important but sensitive resource.



Fabio Ehrengruber



Fabio Ehrengruber

■ **CEP unites governments, non-governmental organisations, and other institutions to protect coral reefs in the Caribbean.**



UNEP / Urmila Maharaju

Promoting Sustainable Tourism

The Caribbean’s coral reefs, sandy beaches, tropical climate, and warm and friendly people draw millions of tourists from around the world every year. The Caribbean Alliance for Sustainable Tourism estimates that one in every four jobs in the Caribbean is part of the tourism industry. Coral reefs in the Caribbean are the destination of approximately 60 percent of scuba diving tours worldwide.

Tourism activities are usually concentrated in coastal areas, and thus place extra stress on these sensitive environments. A 1997 CEP technical report documented the negative impacts of tourism on the Caribbean environment, including a number of factors that harm coral reefs: smothering sediment loads, improper sewage disposal, overfishing, coral harvesting, and boat anchor damage.

CEP’s Caribbean Environmental Network Project, a joint venture with the United States Agency for International Development, worked to improve environmental quality and natural resource protection by promoting environmentally sound tourism industry practices. The project involved working in close collaboration with the Caribbean Tourism Organisation (CTO) and Caribbean Hotel Association (CHA). Results of the three-year project included training of stakeholders and publication of several studies, training materials, and reports. In addition, the Caribbean Hotel Association formed the Caribbean Alliance for Sustainable Tourism (CAST), a non-profit organisation that provides environmental expertise and assistance to hotel and tourism operators in the Caribbean region.

CAST also has developed an “Environmental Management Tool Kit for Caribbean Hotels” and conducts seminars for its 1,900 members in sustainable management practices. Best practices cover such issues as waste management, water and energy usage, tourist recreation, and interaction with the local community.

Protecting Sensitive Habitats

CORAL REEFS, SEAGRASS BEDS, AND MANGROVES are among the most important but least well known marine and coastal ecosystems in the region. These habitats are being altered and destroyed by construction, dredging, mining, and anchoring, threatening the biodiversity that contributes to the health, beauty, and economy of the Caribbean region.

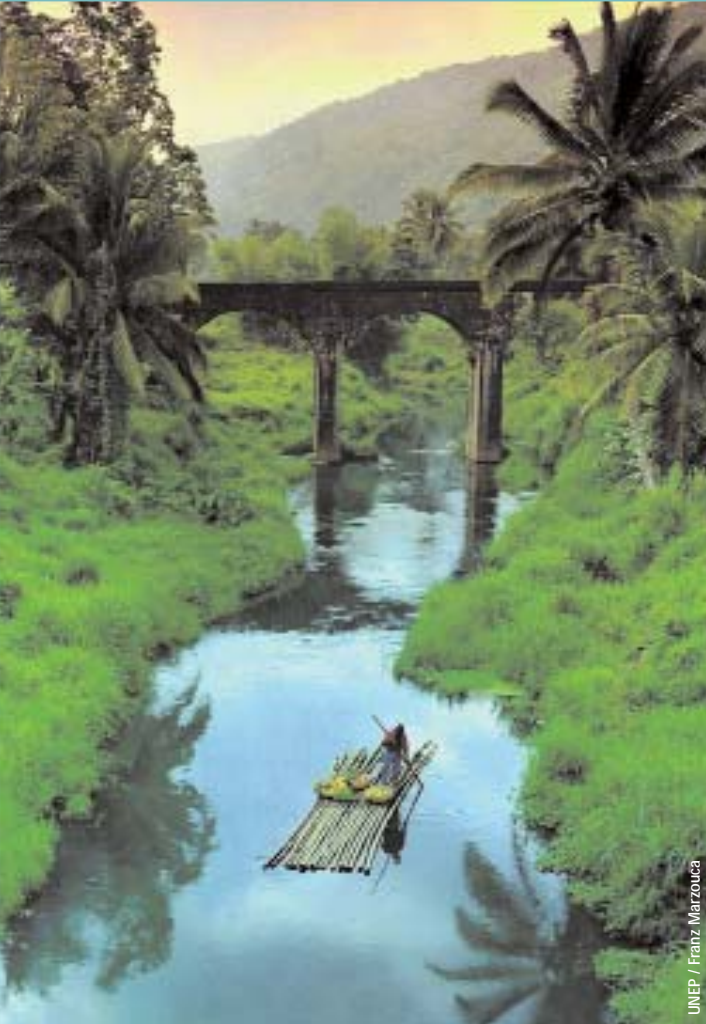
For example, when mangroves are cut down for housing, roads, or industry, the coast becomes more vulnerable to erosion and flooding. Increasing sedimentation can stress or even smother coral reefs. Mangroves also provide nurseries for many commercially important fisheries species, such as lobster and conch.

Scientific evidence demonstrates that marine reserves conserve both biodiversity and fisheries, and could help to replenish the seas by protecting young marine life. The Specially Protected Areas and Wildlife (SPA) Protocol of the Cartagena Convention creates a network of protected areas to conserve regional ecosystems, including coral reefs, mangroves, and seagrass beds.

Almost every Caribbean nation has designated one or more marine protected areas (MPAs). However, the effectiveness of these protected areas varies greatly from one country to another. Many protected areas have been established by law, but are not being managed and protected in reality, due in part to lack of institutional capacity and information. CEP builds the capacity of governments to protect these areas from undesirable development, pollution, and exploitation.

CEP activities include:

- **NETWORKING.** CEP has established a network of marine protected area managers (CaMPAM) to share information, experiences, and ideas for solving common problems.
- **TRAINING.** CEP offers a train-the-trainer programme for MPA managers, covering such topics as management plans, operational plans, public awareness, monitoring, and planning/zoning.
- **PROVIDING FINANCIAL ASSISTANCE.** CEP offers small grants to strengthen MPA capacity to prepare management plans, begin public awareness programmes, or support infrastructure development.



UNEP / Franz Marzouca

■ **CEP builds the capacity of governments to protect sensitive habitats from undesirable development, pollution, and exploitation.**

Bonaire Marine Park

Obtaining adequate funding is the most common difficulty facing marine protected areas in the Caribbean. By instituting user fees and reaching out to stakeholders, Bonaire Marine Park has become one of the few self-funded, actively managed, protected marine areas in the world.

Bonaire is a small island in the Netherlands Antilles in the southern Caribbean, approximately 60 km north of Venezuela. The Marine Park extends all around the island, from the high-water mark to a water depth of 60 meters. Ranked as one of the top ten diving destinations worldwide, Bonaire relies on dive tourism to support its economy. In 1999, approximately 70,000 tourists visited Bonaire, including 29,500 divers.

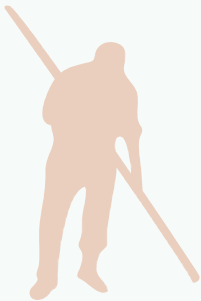
In 1992, the island government instituted a US\$10.00 annual admission fee, payable by anyone scuba diving in the Marine Park. Within a year, the park was entirely self-sustaining – without relying on government funds to support its programmes. Through the user fees, the park maintains moorings and shoreline marker stones, and operates educational programmes aimed at both islanders and tourists. Park rangers patrol daily, by both land and sea. Grants are sought from donor agencies to support some capital expenses and research projects.

Through both education and enforcement, Bonaire has virtually eliminated such destructive practices as anchoring, coral collecting, and spearfishing. The marine park is an excellent example of how the tourism industry and conservationists can work together to protect coral reefs in the Caribbean.

CEP congratulates the Bonaire Marine Park on its success. CEP is working to promote the park as an excellent example of how the tourism industry and conservationists can work together to protect coral reefs in the Wider Caribbean Region.



UNEP / Jerry Kasparek



Protecting Endangered Species

THE WIDER CARIBBEAN REGION contains a great abundance of plant and animal species, representing the greatest concentration of biodiversity in the Atlantic Ocean Basin. However, human activities have destroyed a number of unique ecosystems and habitats, and species have been lost. In the last 150 years, eight species of vertebrates have become extinct in Jamaica alone.

The primary threats to endangered species in the Wider Caribbean Region include pollution; sedimentation; overexploitation of resources, including fisheries; and habitat destruction due to coastal development, population growth, and increased tourism. In the Caribbean, 76 percent of all endangered species are threatened by habitat loss or habitat modification.

Species that mature slowly and produce few young are particularly vulnerable. In the Caribbean, this category includes sea turtles, sharks, whales, manatees, and sea birds. Sea turtles, for example, may take up to 50 years to reach sexual maturity and only one in a hundred make it to adulthood. Hundreds of thousands of dolphins and whales die worldwide each year in fishing nets. The slow-moving and gentle West Indian manatee, also known as the sea cow, faces threats from boaters as well as from coastal development, poachers, and herbicides that destroy its habitat.

The responsibility for managing endangered or threatened species in the Caribbean Sea is shared by 28 UN member states. In many cases, regional co-operation is necessary to protect species and address environmental issues that cross national boundaries, in particular for highly migratory species such as sea turtles, whales, dolphins, and many birds.

The SPAW Protocol of the Cartagena Convention lists several endangered or threatened species as priorities for the Caribbean region. These include all marine mammals and sea turtles, as well as species of economic importance in the region: the conch, the spiny lobster, and coral reefs. CEP activities include:

- **PROVIDING TECHNICAL ASSISTANCE.** CEP prepares management plans at the regional level and helps governments prepare recovery plans at the national level to restore endangered populations and/or their habitats. CEP works in partnership with other organisations, experts and regional networks, such as WIDECAST for sea turtles.
- **NETWORKING.** CEP encourages regional networking and information sharing on the status of endangered species and national protected areas.
- **INCREASING PUBLIC AWARENESS.** CEP helps to raise public awareness of endangered species by working in partnership with conservation organisations such as the International Fund for Animal Welfare (IFAW), the Eastern Caribbean Cetacean Network (ECCN), the MER Centre, and the Center for Marine Conservation (CMC).



UNEP / Scott Price



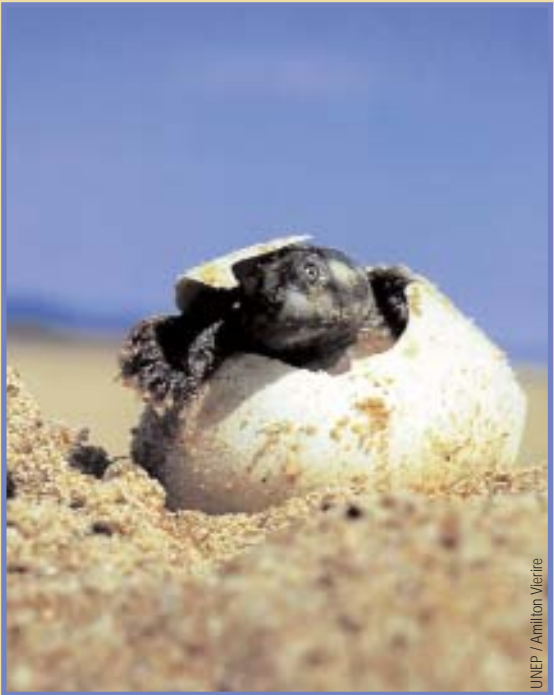
UNEP / D. Tipton

“The Cartagena Convention and its Protocols constitute a shared vision of the future... The CEP Regional Co-ordinating Unit is entrusted with shepherding that vision, supporting nations on their political and socio-cultural journeys to a sustainable future, and ensuring the ecological integrity and economic vitality of the Caribbean Sea. For the last two decades the RCU has discharged its unique responsibilities with professionalism and creativity – I don't know where the region would be without them!”

- Karen L. Eckert, Ph.D., Executive Director, Wider Caribbean Sea Turtle Conservation Network (WIDECAST)



UNEP / D. Bartell



UNEP / Anilten Verle



UNEP / Ann Hemann

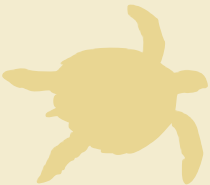
Saving Sea Turtles

During the last two centuries, sea turtles have declined dramatically throughout the Wider Caribbean Region. High human-induced mortality rates have placed all six Caribbean-occurring species at risk. Over-exploitation, especially of adult females on nesting beaches and the widespread collection of eggs, are largely to blame. In addition, thousands of sea turtles are accidentally captured and killed each year in active or abandoned fishing nets.

Sea turtles are highly migratory, passing through the territorial waters and coastal areas of many countries over the course of their long lives. As adults, leatherback turtles return to foraging grounds in the North Atlantic and West Africa after nesting in the Caribbean, and green turtles forage in more than a dozen Caribbean nations after nesting in Tortuguero, Costa Rica. While local conservation is crucial, action also is needed at the regional level.

WIDECAST, the Wider Caribbean Sea Turtle Conservation Network, brings together international experts with local country co-ordinators and interested citizens to promote locally based sea turtle management and conservation. WIDECAST was formed in 1981 to assist Caribbean governments in fulfilling their obligations under the Cartagena Convention and, later, the SPAW Protocol. This includes assistance in preparing Sea Turtle Recovery Action Plans, as well as educational materials for the public, and technical workshops on sea turtle biology and conservation.

WIDECAST is a vital partner in CEP's efforts to promote best management practices for turtle survival, such as community-based eco-tourism, alternatives to beachfront lighting, protecting coral reefs and other feeding habitats, and improving law enforcement and the regulatory framework.



Controlling Marine Pollution



POLLUTION IS A THREAT to environmental and human health throughout the Caribbean region. Some 80 to 90 percent of marine pollution is caused by land-based activities. These activities include inappropriate sewage treatment, agricultural non-point sources, inappropriate coastal development, and domestic and industrial activities associated with large urban areas.

Most industries in the Caribbean discharge wastewater directly into the sea, without prior treatment. More than 70 percent of the 80 million people in the Caribbean live in coastal cities, and most of these cities have no functioning or poorly functioning sewage treatment systems. Rivers are contaminated by unsustainable agricultural practices, and bays are further contaminated by ports lacking systems for handling solid and liquid shipping wastes.

The Protocol Concerning Pollution from Land-Based Sources and Activities (LBS Protocol) requires countries to prevent, reduce, and control such pollution in the Wider Caribbean Region. CEP promotes monitoring, integrated planning, and institutional development to help nations control pollution and restore contaminated areas. CEP works to leverage resources from many partners in the region to conduct activities to promote the LBS Protocol:

■ **IMPROVING COASTAL MANAGEMENT.** Through workshops and direct assistance, CEP helps Caribbean nations implement integrated coastal area management as a primary tool for controlling pollution. Integrated planning and management allows for balanced economic and social development, without compromising the protection of natural resources.



■ **IMPROVING ENVIRONMENTAL MONITORING.** CEP builds capacity within Caribbean nations to conduct environmental assessments and monitor their own environmental conditions.

■ **PROMOTING SUSTAINABLE AGRICULTURE.** Through workshops and demonstration projects, CEP encourages the use of best management practices for agricultural non-point sources of pollution, such as erosion and sediment control, pesticide/nutrient control, water management, and solid waste controls.

■ **IMPROVING SEWAGE TREATMENT.** Through case studies, workshops, and technical reports, CEP helps countries select appropriate and affordable sewage collection and treatment technologies.

■ **RESTORING CONTAMINATED BAYS.** CEP assesses environmental conditions and management practices in heavily contaminated bays, and demonstrates innovative approaches to rehabilitate bays throughout the region.

■ **CEP promotes monitoring, integrated planning, and institutional development to help nations control pollution and restore contaminated areas.**

Improving Sewage Treatment

Domestic and industrial sewage causes some of the most significant coastal pollution in the Caribbean, particularly in developing countries. Many countries have an inadequate number of sewage collection and treatment facilities, while the facilities that do exist are often poorly maintained or inoperable.

Industrial facilities often store waste on factory sites or vacant lots, dispose of it in municipal dumps, or discharge it into rivers with little or no treatment. Only 39 percent of 140 small industries surveyed in 1995 by the Caribbean Community (CARICOM) undertook some form of wastewater treatment.

Untreated sewage can threaten human health, reduce fisheries, and cause harmful algal blooms that damage coral reefs. Under the LBS Protocol, CEP is helping countries select appropriate technologies to collect and treat sewage.

For example, CEP is developing sewage treatment needs assessments in several countries to help them implement the LBS Protocol's requirements to prevent, reduce, and control sewage-related pollution.

A CEP technical report, *Appropriate Technology for Sewage Pollution Control in the Wider Caribbean Region*, assists nations in making decisions on sewage collection systems and sewage treatment to meet the regional effluent standards. CEP workshops also bring together wastewater treatment professionals from throughout the region to discuss such issues as practical treatment standards, effluent reuse, and discharges to sensitive receiving waters.



Creating an Environmental Network



When the Caribbean Nations drafted the Cartagena Convention, they acknowledged a need for greater co-ordination of resources and activities in the region. The Convention requires countries to co-operate in scientific research, monitoring, and the exchange of data and other scientific information. Therefore, one of CEP's central roles has been to assist and promote greater co-ordination of environmental activities and to disseminate information throughout the Wider Caribbean Region.

The CEP Regional Co-ordinating Unit has created an environmental network that gathers and disseminates information to researchers, facilitates co-operation and co-ordination in the region, and builds the capacity of nations to use information technology to manage the marine and coastal environment.

Activities include:

- **DEVELOPING INTERNET-BASED TOOLS** for information dissemination, including an on-line clearinghouse of Caribbean environmental data and day-to-day information exchange through e-groups and web pages.
- **IMPROVING ENVIRONMENTAL PLANNING** and decision-making by developing capacity in the region to obtain and use information technology. CEP has provided training to help countries employ powerful information tools, such as geographic information systems, web pages, and the use of satellite imagery.
- **DEVELOPING A MORE INTERACTIVE WEBSITE** and an improved CEP News bulletin to facilitate information sharing in the region.
- **TAKING ADVANTAGE OF THE DEVELOPING INTERNET ENVIRONMENT** to expand CEP's environmental network to more users and more providers of data and information.

CEP's website at <http://www.cep.unep.org> is a valuable resource for researchers and governments working in the Caribbean – and many outside the region. Dr. Robert Ryerson, a researcher working in Ottawa, Canada, wrote:

"(The site) is the single most comprehensive source on coastal areas: issues, needs, management, and the legal constructs that impact the coastal zone. After seeing a number of sites with data that are much older, poorly written and far less comprehensive, it was nice to see one with such a thorough treatment of the topic with such solid links and good references. Thank you!"

Using Technology to Improve Environmental Management

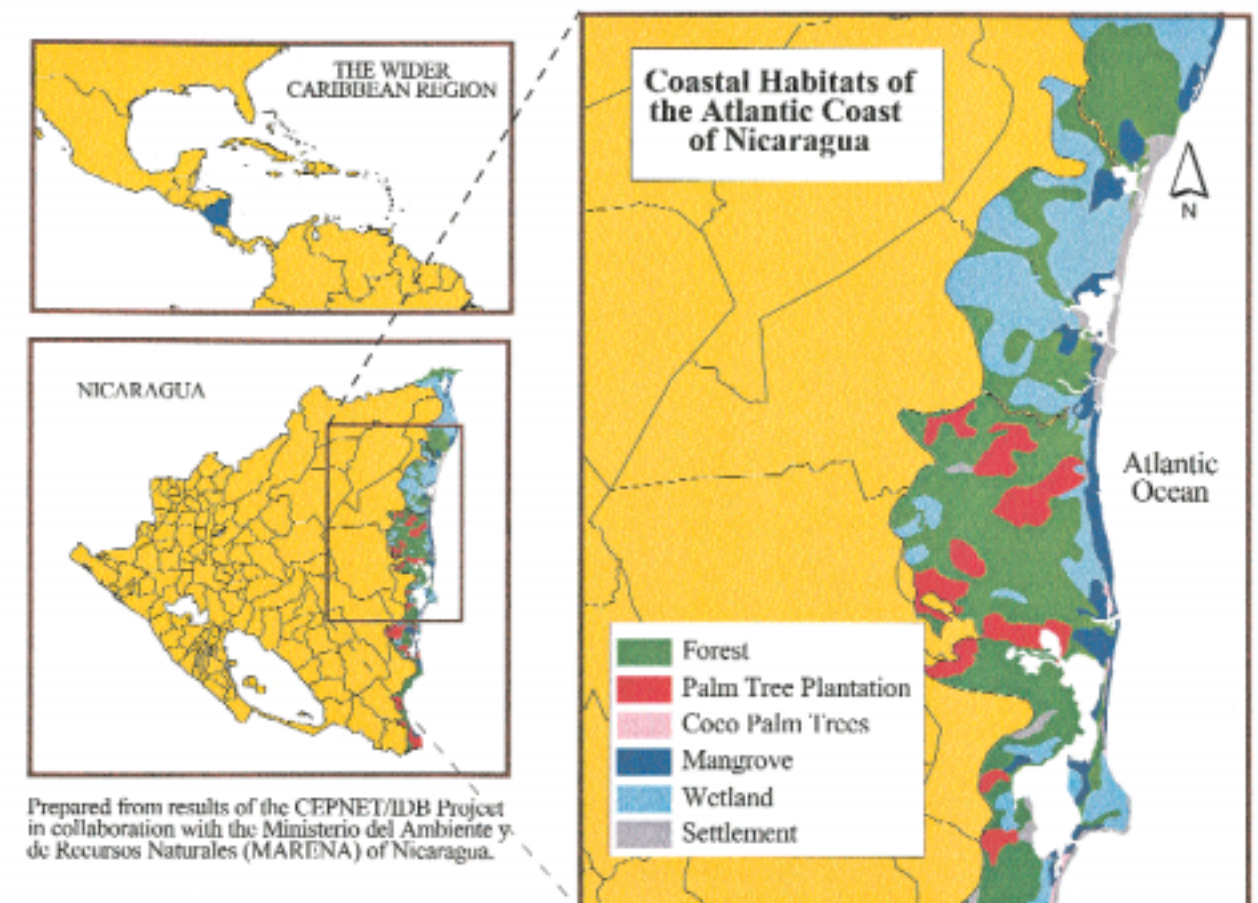
In recent years, new and emerging technologies have made the Internet an indispensable tool for information dissemination and management. To take advantage of this tool for managing the Caribbean environment, CEP is helping nations develop interactive, Internet-based, geographic information systems that provide decision-makers with updated, high quality information. CEP will build regional capacity to employ these technologies through on-line training programmes, improved access to clearinghouses, and monitored e-group discussions.

This approach was first envisioned when CEP joined with the Inter-American Development Bank (IDB) to create the CEPNET/IDB project. CEPNET strengthened capacities of governments and CEP to document and disseminate data they already held, thus promoting information-sharing and enhancing expertise in coastal and marine resource management. The project was initially developed in six IDB member countries: Barbados, Dominican Republic, Jamaica, Nicaragua, Trinidad and Tobago, and Venezuela.

The project was designed to enhance communications via the Internet and to disseminate metadata, or data about data. The participating agencies created Web sites with environmental information, as well as metadata for key marine and coastal datasets. The metadata form the backbone of a searchable Internet clearinghouse on coastal and marine data in the Wider Caribbean Region.

Project participants also published "State of the Coasts" reports for their countries, using Web-based geographic information system (GIS) tools to demonstrate coastal zone management case studies. For example, the map below highlights the sensitive coastal habitats along part of Nicaragua's Atlantic coast. This graphic display of environmental information can help decision-makers and stakeholders better manage coastal and marine resources.

CEPNET will continue to promote access to powerful and adapted tools for managing environmental information in the Wider Caribbean Region. CEPNET will serve as a portal to global and regional information and new data sources, such as satellite images, digital maps, and others.



Building Partnerships

THE WORK OF PROTECTING THE CARIBBEAN SEA and its coastal areas is beyond the ability of any one organisation or group of people. For this reason, the Caribbean Environment Programme relies on and collaborates with an extensive network of experts and professionals in government, academia, and non-governmental organisations.

For example, CEP teamed with The Nature Conservancy in developing a funding guide and training programme for managers of marine protected areas. This partnership tapped into The Nature Conservancy's extensive expertise and local contacts to improve management of protected areas, including lessons on how to generate revenue to self-finance programmes and activities.

Academic institutions working in the Caribbean are vitally important CEP partners. The CEP Secretariat works with the EARTH College (Escuela Agricultura de la Region Tropical Humeda/ Agricultural School for the Humid Tropical Region) to implement a pesticide management project in four Central and South American countries. This partnership combines

"The Caribbean Environment Programme is the cornerstone of the region's institutional framework for sustainable development. Across linguistic and political divides, it links all key governmental and civil society actors in the formulation and adoption of regional policies and agreements, and in the implementation of priority programmes."

– Yves Renard, Director, Caribbean Natural Resources Institute (CANARI) in St. Lucia

CEP's expertise on coastal and marine area protection with the EARTH College's knowledge of local agricultural areas and practices.

In addition, CEP works with the University of the West Indies to monitor coral reefs and teach the principles of coastal zone management, and with the Consortium of Caribbean Universities to provide practical training to technical staff in government ministries of environment and tourism.

CEP also strives to promote greater co-ordination within the Caribbean of other multilateral environmental agreements at the global level. For example, CEP has developed joint activities with the Secretariat to the global Ramsar Convention on wetlands protection, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA), and the Convention on Biological Diversity. Because the CEP and these agreements have similar objectives, the joint activities have maximized resources while increasing co-ordination and communication among government officials responsible for their implementation.

"The Institute of Marine Affairs appreciates the hard work and dedication shown by CEP in facilitating the development of the Cartagena Convention and its Protocols, which will ultimately lead to the sustainable development of the Wider Caribbean Region."

– Hazel McShine, Director, Institute of Marine Affairs, Trinidad and Tobago



Fabio Ehrengruber

"CEP understands the unique social, cultural and economic conditions facing small island nations in the Caribbean. CEP's particular sensitivity to the concerns and vulnerability of small island developing states has fostered greater support for CEP's work throughout the region."

– Christopher Corbin, Sustainable Development and Environment Officer, Ministry of Planning, Development, Environment and Housing, St. Lucia

"Co-operation within the Wider Caribbean Region has slowed the rate of environmental degradation and sustained the hope for a better future."

-- David Read Barker, President, Monitor International

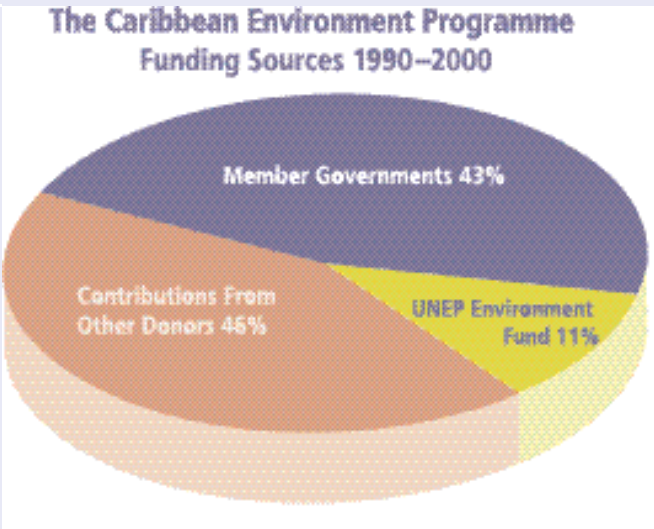
"The Caribbean Environment Programme has played a catalytic role in bringing together the resources of the diverse institutions of the region toward the common goal of sustainable development of our marine and coastal environments. Examples of this are clearly seen through the projects involving the environmental management of heavily contaminated coastal ecosystems and pilot projects involving waste management".

– Dr. Manuel Alepuz, Executive Director, CIMAB, Cuba

Financial Mechanisms

CEP operates from the Caribbean Trust Fund administered by UNEP Headquarters in Nairobi, Kenya. CEP was initially funded under UNEP's Environment Fund, but the programme was designed to sustain long-term support from its member governments in the Wider Caribbean Region and through other partner governments and organisations. Today, the governments of the Wider Caribbean meet the basic financial operating costs of the Regional Co-ordinating Unit through voluntary contributions. Contribution levels are established during the biennial Intergovernmental Meetings of CEP, with payments made directly to the Caribbean Trust Fund.

Also during the biennial Intergovernmental Meetings, the CEP governments approve a two-year workplan and budget, which authorises CAR/RCU to seek additional funding for specific projects and activities. Project funding comes from development agencies, non-governmental organisations, the private sector, and extraordinary contributions from member and non-member governments. Through partnerships with other UN agencies or non-governmental organisations, CEP also leverages co-financing of many projects in the Caribbean. CEP is always willing to forge new partnerships with other technical and financial institutions in the region.



Through new and existing partnerships, CEP unites many people and organisations working toward a common goal: protection of the marine environment and sustainable development of the Caribbean Sea and its coastal resources.



Preserving Our Future

Through the Caribbean Environment Programme, governments are co-operating to create a more sustainable future for marine and coastal resources in the Wider Caribbean Region. While many challenges face the region, CEP's long-term goal remains unchanged:

To achieve sustainable development of marine and coastal resources in the Wider Caribbean Region through effective, integrated management that allows for increased economic growth.

To achieve this goal, CEP is pursuing the following objectives:

- **MAINTAINING A SOUND INSTITUTIONAL AND FINANCIAL BASE** to carry out the mandates of the Cartagena Convention and its Protocols.
- **STRENGTHENING THE REGION'S LEGAL AND LEGISLATIVE CAPABILITIES** to protect marine resources, and, where appropriate, facilitating the signature, accession, or ratification of the Cartagena Convention and its supporting Protocols.
- **INFORMING GOVERNMENTS** about multilateral environmental agreements applicable to the region, and promoting co-ordination in their implementation.
- **DEVELOPING A TECHNOLOGICALLY ADVANCED AND INTEGRATED REGIONAL NETWORK** for information management for the coastal and marine environment.
- **ENHANCING THE REGION'S CAPABILITIES TO USE SCIENCE AND TECHNOLOGY** to address problems of marine pollution, protected area management, conservation of bio-diversity, and protection of threatened and endangered species.
- **BROADENING CEP'S CONSTITUENCY** by incorporating public outreach in all activities.

With greater environmental and development challenges competing for shrinking budgets, governments and agencies must work together in the Wider Caribbean Region. CEP is actively seeking partnerships with other institutions, organisations, and individuals with similar interests. Working together, we can demonstrate how regional co-operation can help disparate governments and cultures achieve their common goals.

FOR MORE INFORMATION, visit CEP's website at <http://www.cep.unep.org> or contact us at:

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